

CALIFORNIA DEPARTMENT OF WATER RESOURCES
DIVISION OF FLOOD MANAGEMENT

Monthly Report

Central Valley Flood Protection Board Meeting

July 27, 2018

John Paasch

Division of Flood Management

CA Department of Water Resources



Ca Extreme Precipitation Symposium | July 9

Paleoclimate Insights for Planning Future Water Resources



**Improve flood
risk management
planning**



**Increase
warning time for
large floods**



Sacramento Weir Charette | July 16

Objective: Reach agreement with non-federal partners regarding project features and execution with USACE.





Inaugural Ad Hoc Group Meeting | July 18

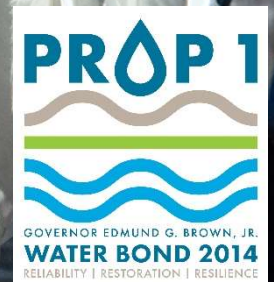
DWR Convened Inaugural Community-Led Meeting for Oroville Dam Safety Comprehensive Needs Assessment





Tribal Government Workshop | July 18

Proposition 1 Water Bond Funding Update





FEMA Virtual Tabletop Exercise Dam Failure | July 19



An aerial photograph of the Folsom Dam and Sacramento Weir. The dam is a large concrete structure with multiple spillways, situated on a rocky riverbed. The Sacramento River flows through the spillways. In the background, a large reservoir is visible, surrounded by green hills. A highway runs along the right side of the dam. The sky is clear and blue.

\$1.8 Billion Federal Funding for Sacramento Flood Protection

- Strengthen levees
- Raise Folsom Dam
- Widen Sacramento Weir

Wadsworth Canal SERP Site 1 Repair

Placement of rip-rap began July 24



Central Valley Tributaries Program



15 Workshop
Attendees

June 26 in Fresno
June 28 in Red Bluff
June 29 in Sacramento



Comments
Received

July 20 Public Comment
Period Closed



90 Workshop
Attendees

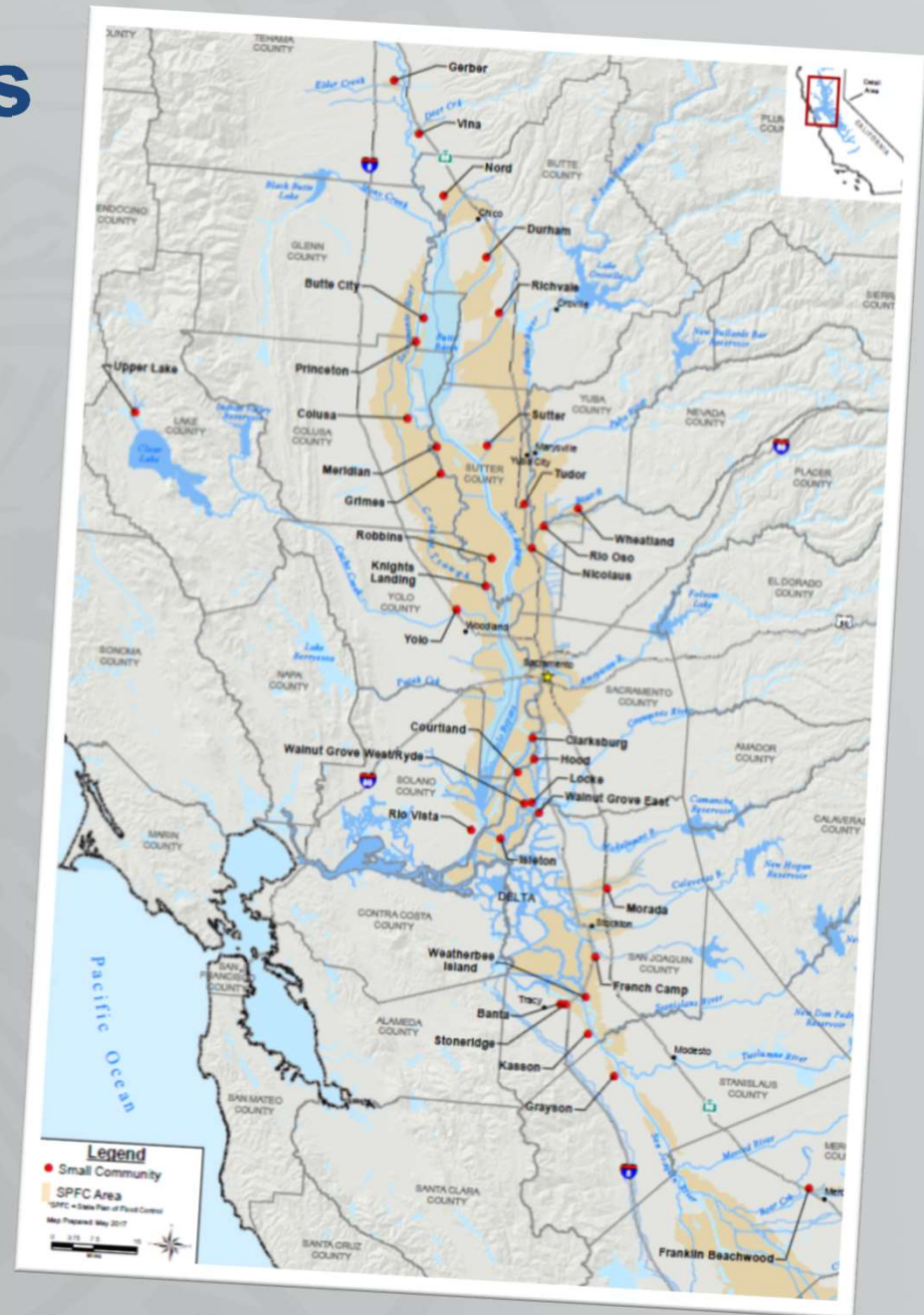
July 18 at Tribal
Government Workshop



Small Communities

Funding Agreements Update

- 23 of 35 Agreements Executed
- 2 waiting for Execution
 - Middle Creek
 - Wheatland
- 6 with Grantee, Pending Local Signature Routing

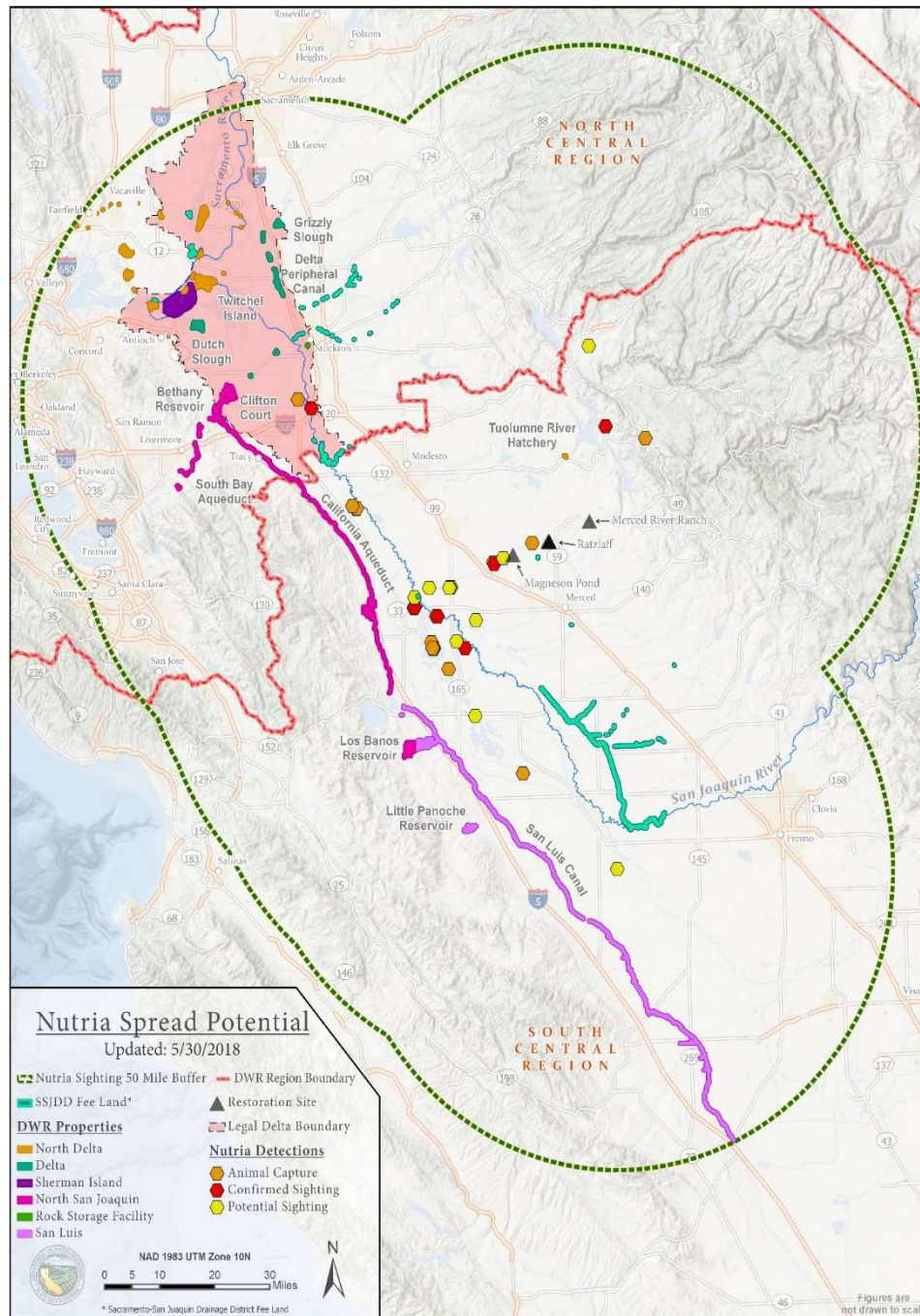


Scheduled Nutria Detection & Reporting Training

July 27 from 1:30-3:30 pm

DES Office (West Sacramento)

- Nutria situation overview and updates
- Nutria signs and detection
- Reporting procedure
- Safety and professionalism
- DWR's role

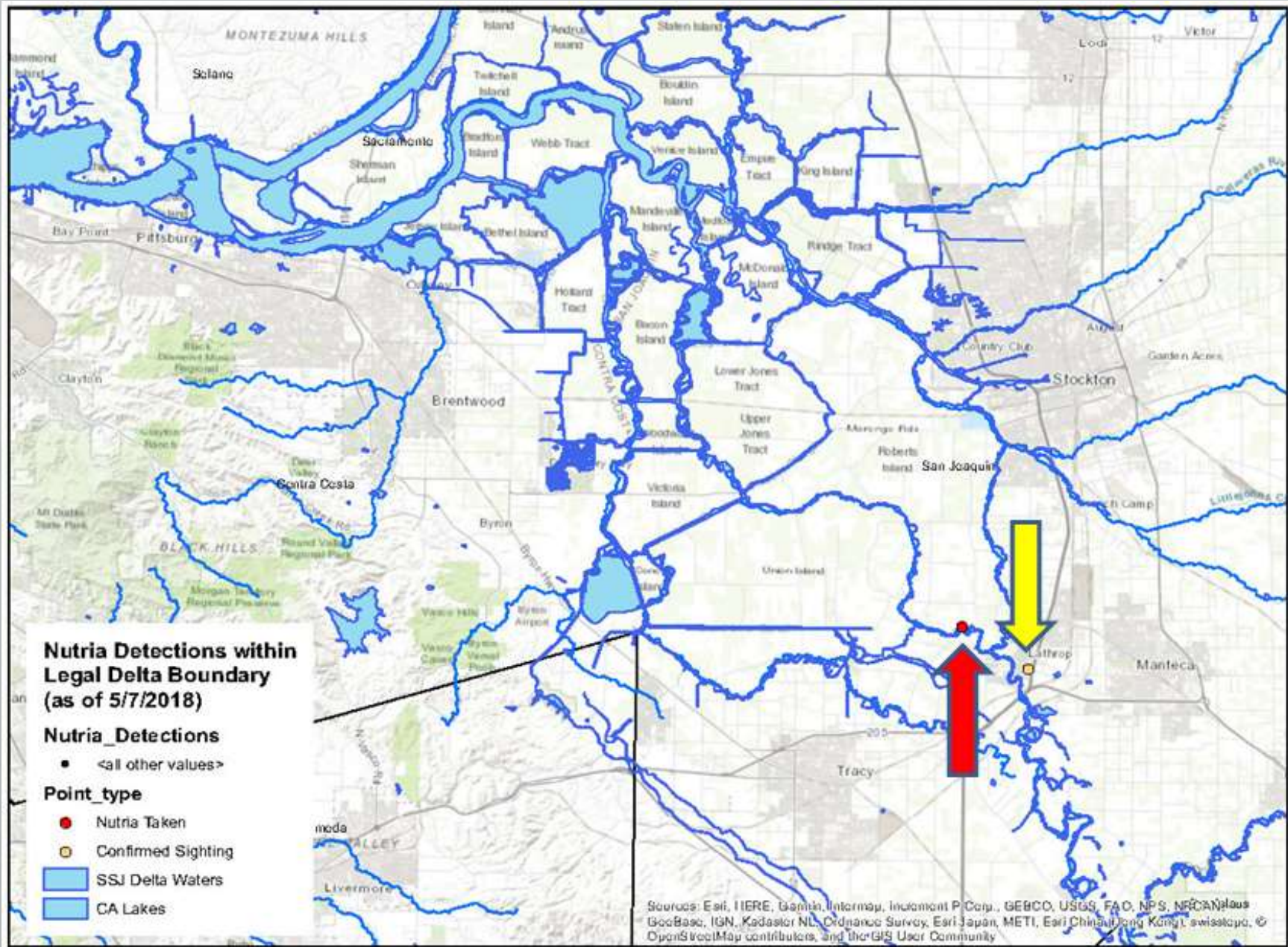


S:\GIS_Enterprise\Projects\Nutria\DWR_Lands_Nutria_Sightings\DWR_Lands_Nutria_Sightings.aprx

Thursday, May 31, 2018



Nutria Detections within Legal Delta



Additional DWR Agenda Items

Bulletin 69-17: California High Water

Sudhakar Talanki, Hydrology and Flood Operations Office

**State-Federal Flood Operations Center
2017 After-Action Report**

Delia McGrath, Hydrology and Flood Operations Office

Questions

JOHN PAASCH

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CALIFORNIA DEPARTMENT OF WATER RESOURCES
DIVISION OF FLOOD MANAGEMENT

Bulletin 69-2017

California High Water Report

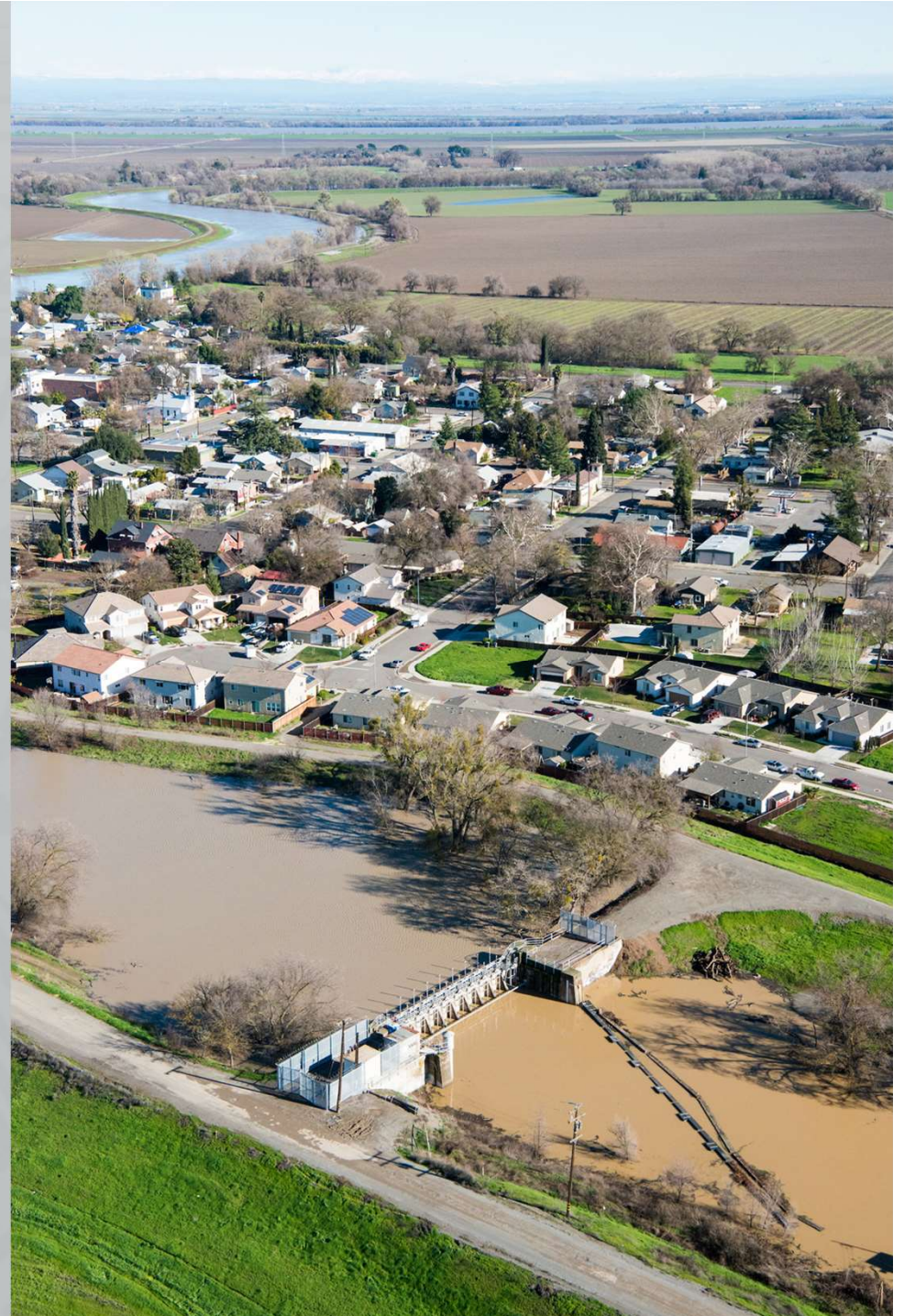
CVFPB Board Meeting | July 27, 2018

Sudhakar Talanki

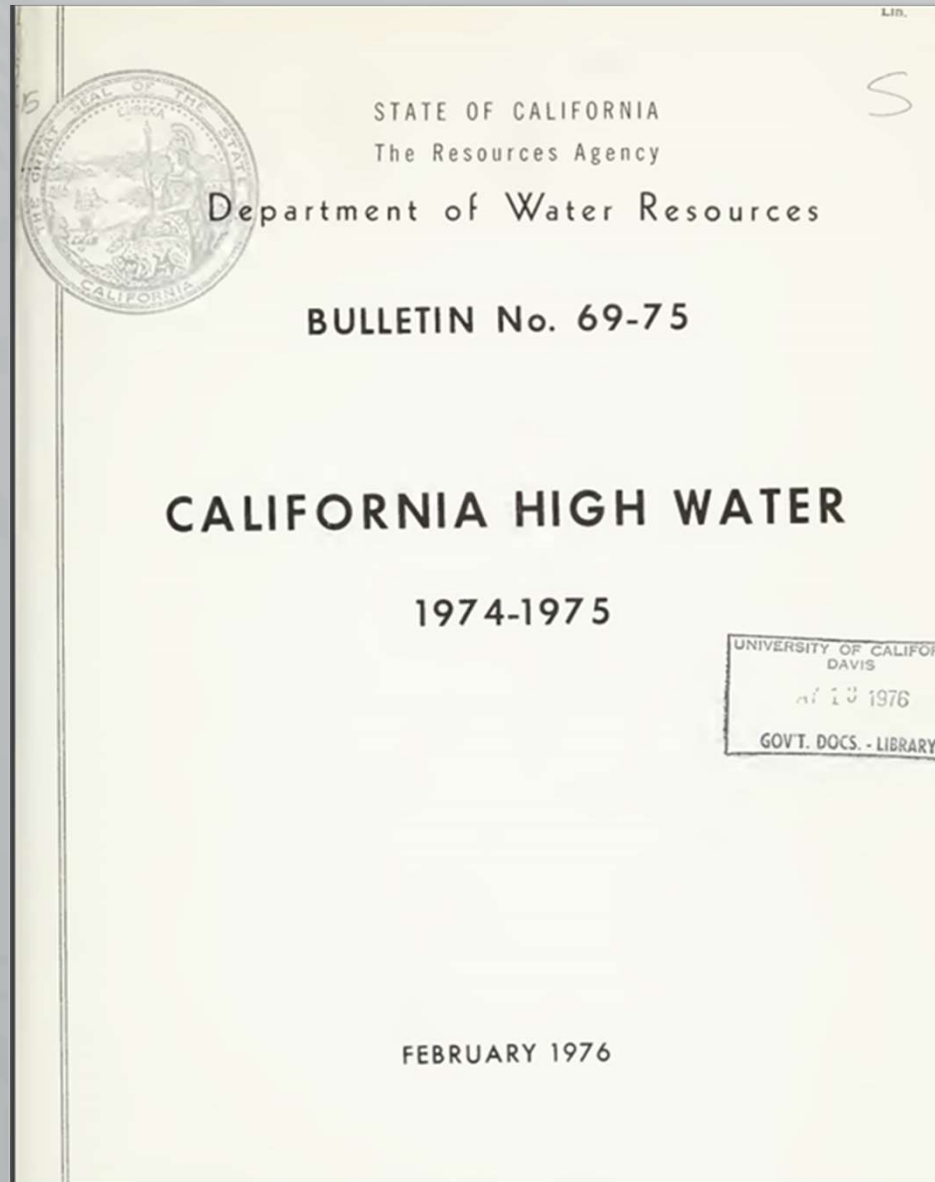
Hydrology and Flood Operations Office

Overview

- What is Bulletin 69?
- Bulletin 69-2017 Overview
 - Preparation
 - Organization
 - Regional Summary Example
 - Highlights
 - Hydrologic Overview
 - Major Flood Events and Responses
 - Estimated Damages
 - Status of the Report



What is Bulletin 69?



Summary of Water Year Flood Events across CA:

- Meteorological Patterns
- Snowpack
- Reservoir Operations
- Precipitation & River Stages
- Events/Damages from Floods & Highwater
- Emergency Response & Coordination

Preparing the 2017 Report: Data

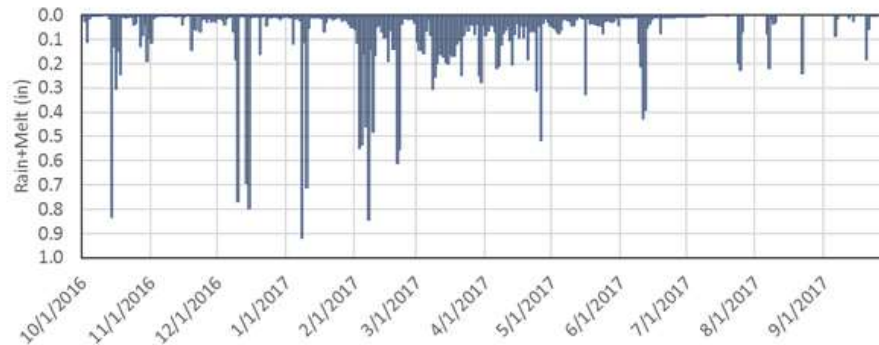
Data Type	Data Source(s)
Reservoir Operations	<ul style="list-style-type: none">• U.S. Army Corps of Engineers (USACE)
River Stages and Precipitation	<ul style="list-style-type: none">• California-Nevada River Forecasting Center (CNRFC)• California Data Exchange Center (CDEC)
Estimated Damages from Floods	<ul style="list-style-type: none">• California Office of Emergency Services (Cal OES)• California Department of Transportation (Caltrans)• DWR Flood Operations Center (FOC)

Preparing the 2017 Report: Tools



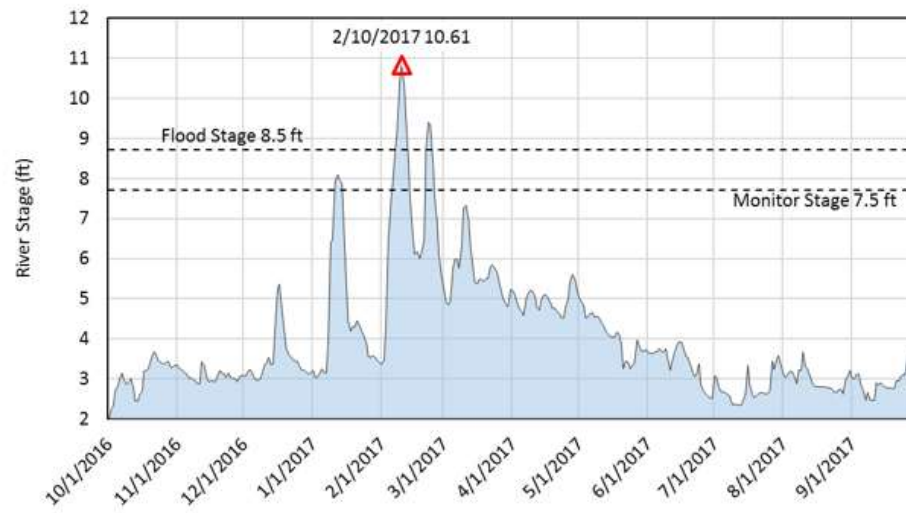
HYDROGRAPH OF THE Pit River - Canby (PCN)

Daily Precipitation



Data Source: CNRFC

Daily High River Stage

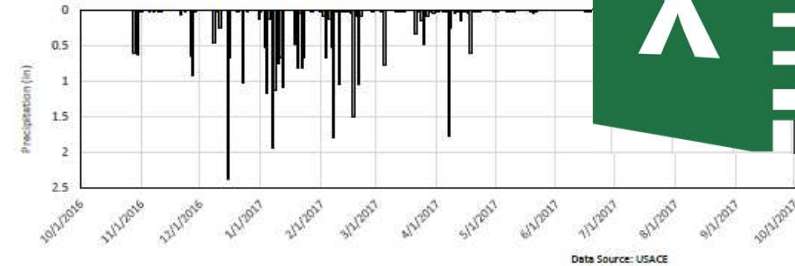


Zero Datum: 4266 NGVD

Data Source: CNRFC & CDEC

Pine Flat Dam Operations

Daily Precipitation @ Pine Flat Dam



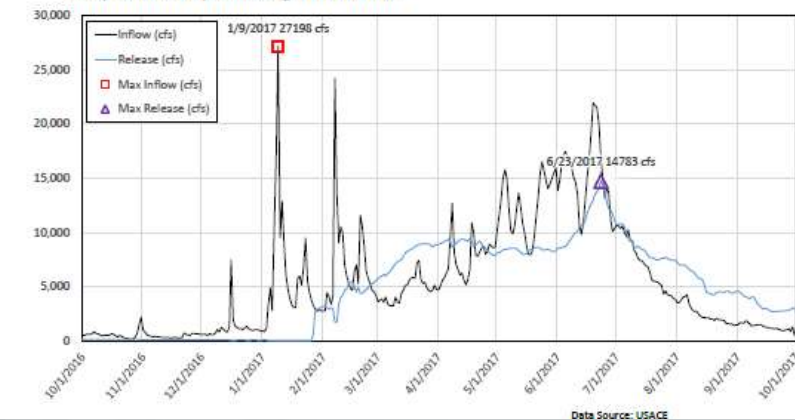
Data Source: USACE

Daily Reservoir Storage @ Pine Flat Dam



Data Source: USACE

Daily Reservoir Operations @ Pine Flat Dam



Data Source: USACE

Bulletin 69-2017 Organization

1

Introduction

2

Overview of Meteorology & Hydrology

3

Regional Summaries for 10 California Hydrologic Regions & Delta

4

Flood Emergency Response Operations

5

Flood Damage Rehabilitation Efforts

6

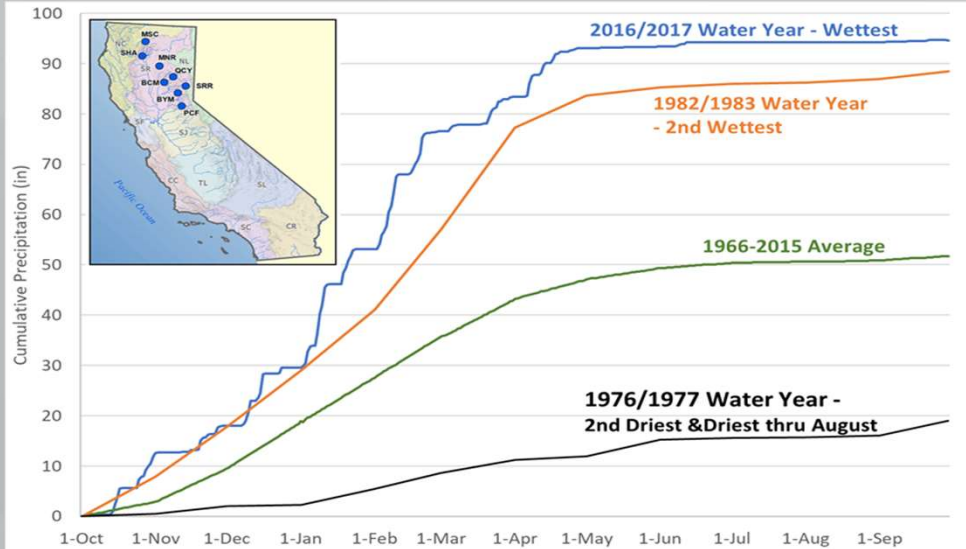
Summary of Flood Damage Costs

Bulletin 69-2017

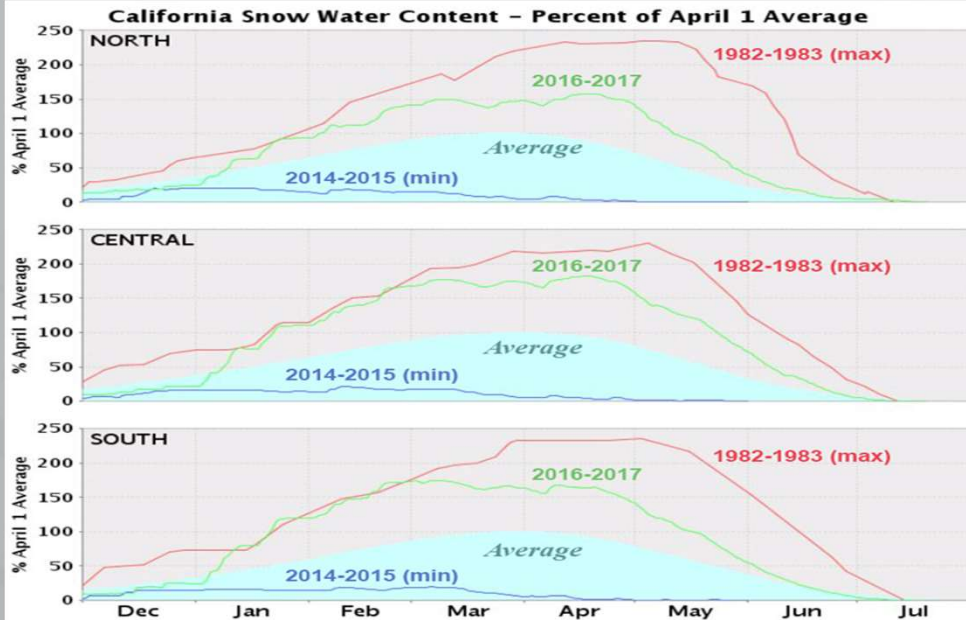
Highlights

- Hydrologic Overview
- Major Flood Events and Responses
- Estimated Damages
- Status of the Report

Hydrologic Overview

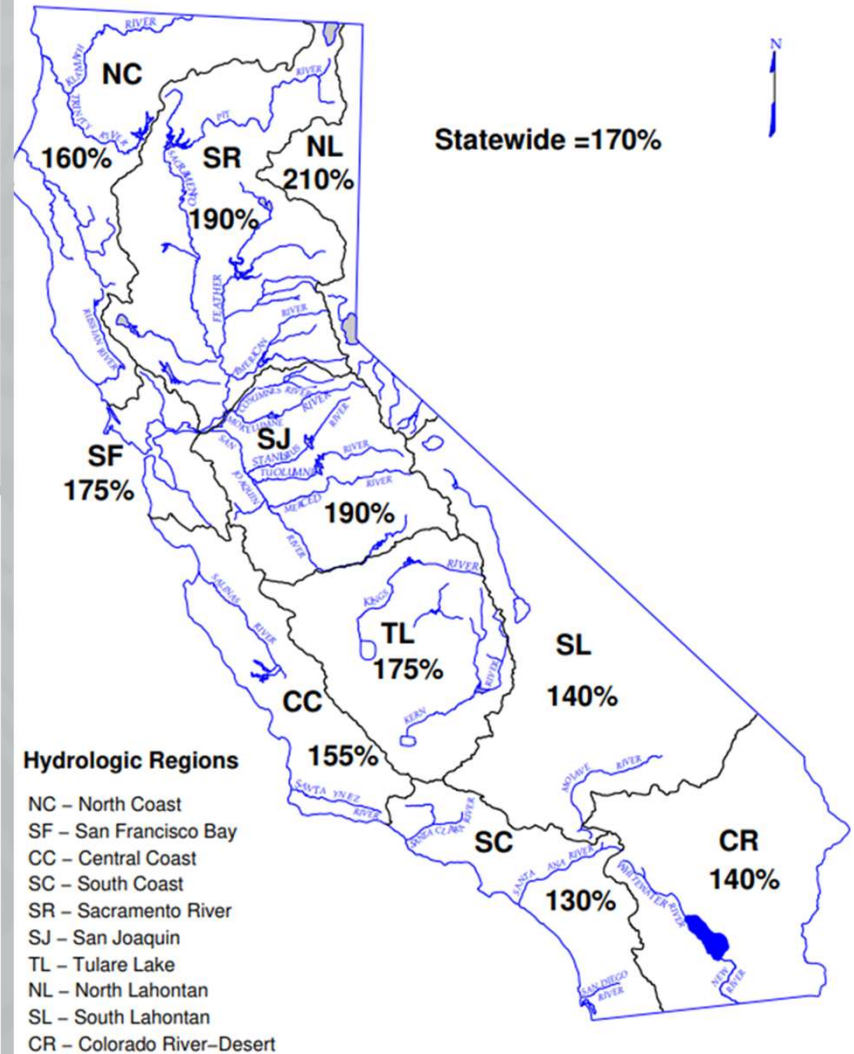


* The Northern Sierra 8-Station precipitation index represents an average cumulative precipitation from 8 stations scattered across the Sacramento, Feather, and American River regions: Mount Shasta City (MSC), Shasta Dam (SHA), Mineral (MNR), Quincy (QCY), Brush Creek (BCM), Sierraville (SRR), Blue Canyon (BYM), and Pacific House (PCF).



CALIFORNIA COOPERATIVE SNOW SURVEYS SEASONAL PRECIPITATION

IN PERCENT OF AVERAGE TO DATE
October 1, 2016 through April 30, 2017



WATER YEAR IS OCTOBER 1 THROUGH SEPTEMBER 30

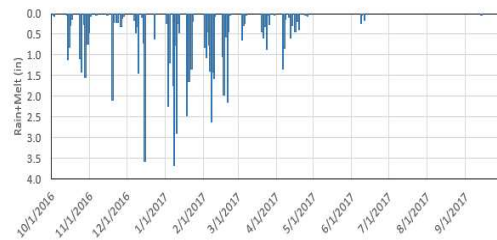
San Francisco Bay Hydrologic Region

Regional Summary Example

ID	Stream Gage Location	2017 Peak Stage (ft)	Flood Stage (ft)	2017 Peak Date
STH	Napa River - Saint Helena	19.5	18	2/7/2017
NAP	Napa River - Napa	26.8	25	1/8/2017
GRJ	Guadalupe River - San Jose - US Highway 101	15.3	17	2/21/2017

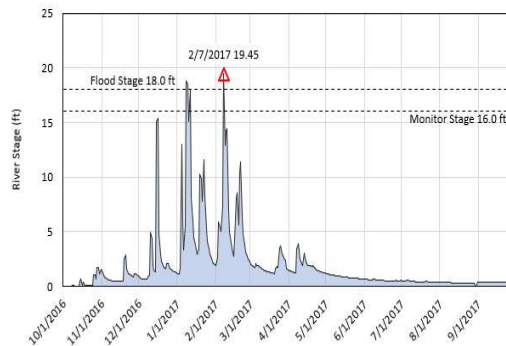
HYDROGRAPH OF THE Napa River - Saint Helena (STH)

Daily Precipitation



Data Source: CNRFC

Daily High River Stage

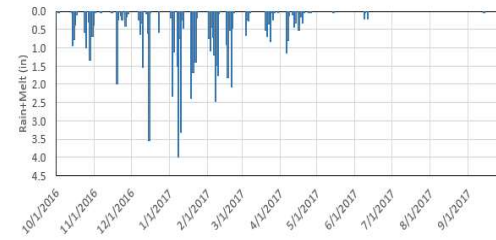


Zero Datum: 193.21 NGVD

Data Source: CNRFC

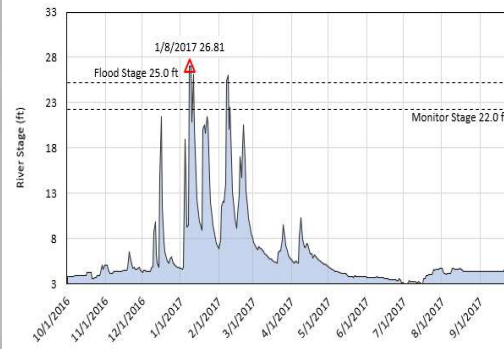
HYDROGRAPH OF THE Napa River - Napa (NAP)

Daily Precipitation



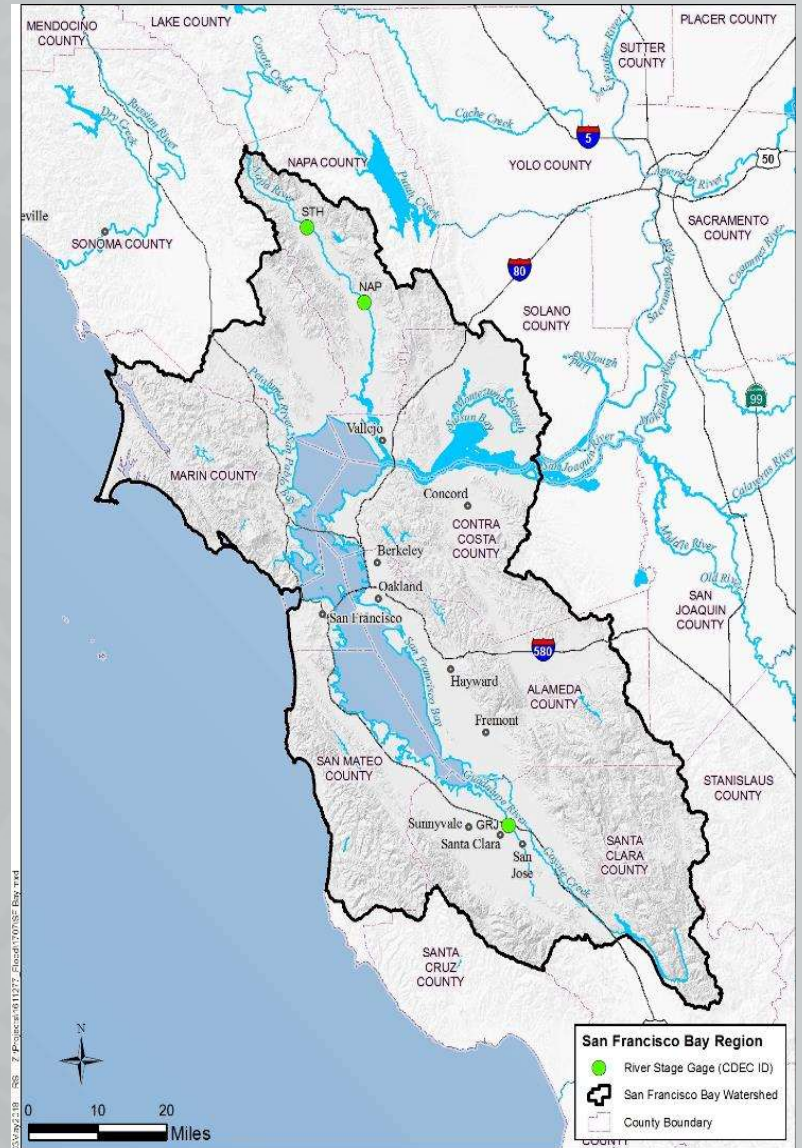
Data Source: CNRFC

Daily High River Stage



Zero Datum: 24.74 NGVD

Data Source: CNRFC & CDEC





Coyote Creek, San Jose

February 21, 2017



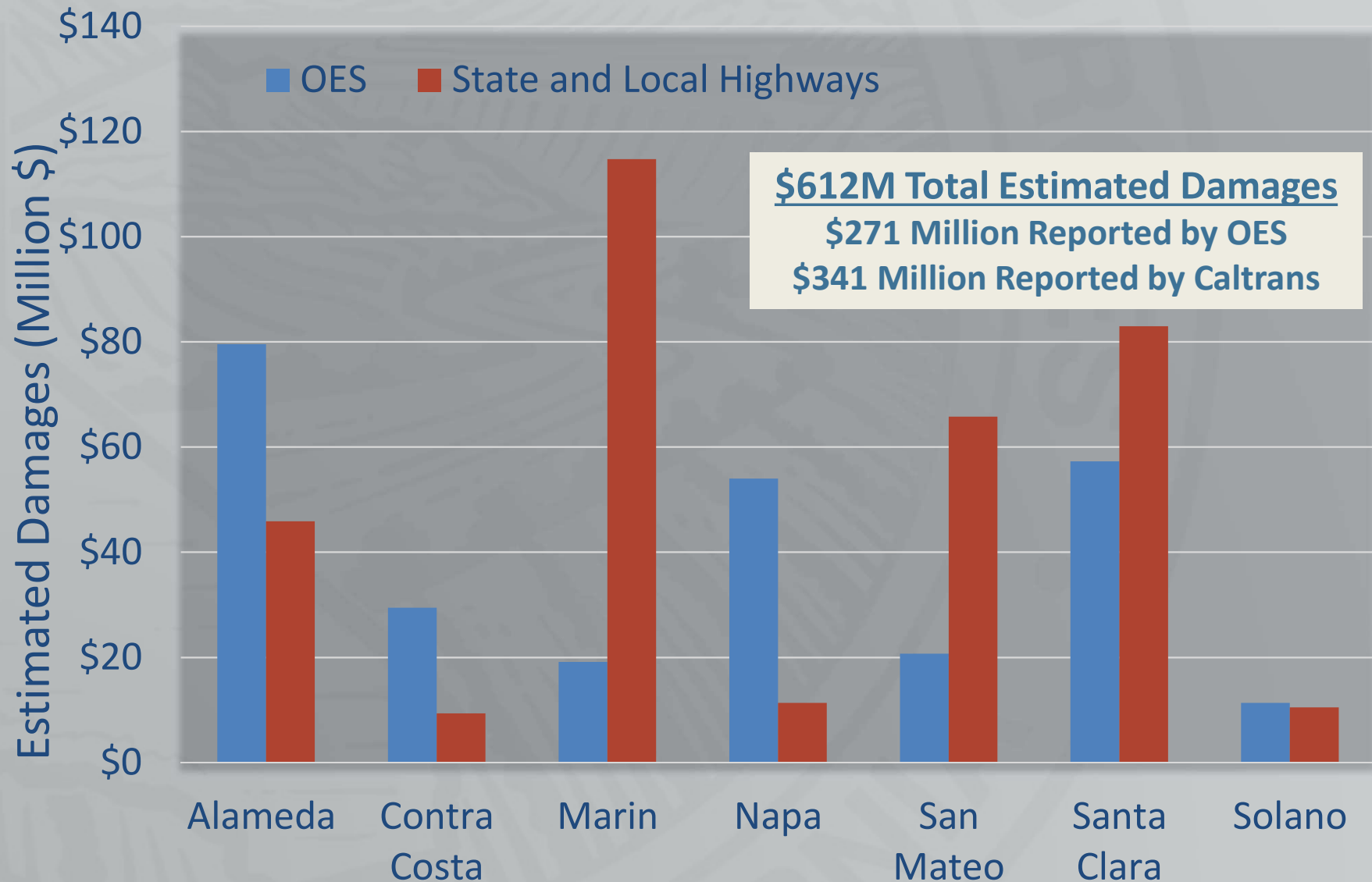
14,000 Evacuated



\$73M Est Damages

San Francisco Bay Hydrologic Region

Regional Summary Example





Major Flood Events and Responses FOC Activation in WY 2017



151 Days

Major Flood Events and Responses

California Floods of 2017 Overview

Early January Storm (1/3 – 1/14)

Multiple atmospheric rivers brought heavy precipitation across the State, particularly along the coast from the Russian River Basin in the north to near Point Conception in the south, as well as areas along the length of the Sierra Nevada range. Ample moisture associated with the storm quickly transformed a below-average snowpack into above-average conditions.

Late January (1/18 – 1/24)

By the end of the second January storm, snowpack exceeded April 1 averages in the southern and central Sierra Nevadas and were close to the April 1 average snowpack in the northern Sierra Nevadas. The rain on snow conditions during the atmospheric river resulted in ample amounts of water in the snowpack.

Early February (2/2 – 2/12)

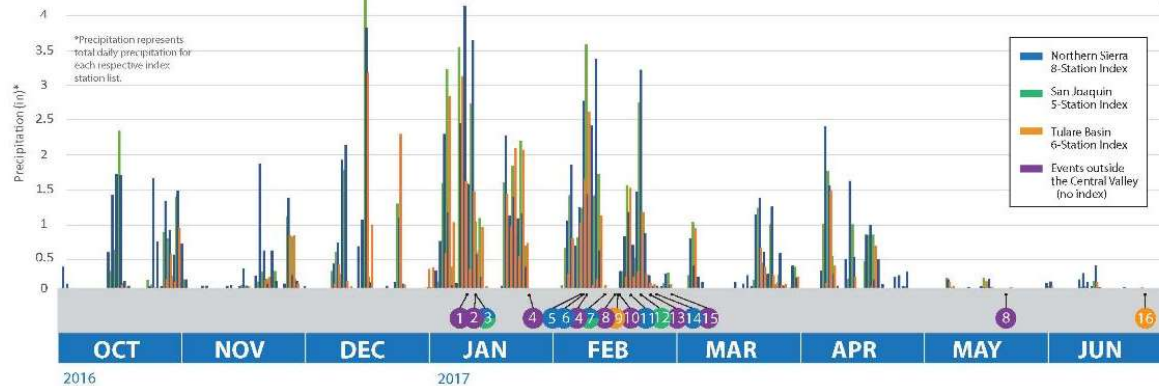
Multiple storms made landfall during this time, showing the heaviest precipitation in northern and central California. Generally high freezing levels resulted in slightly reduced, but still above average snowpack in the Sierra Nevadas.

Late February (2/15 – 2/23)

Again, multiple storm fronts brought significant moisture to the State over several days. In the northern Sierra Nevadas the precipitation was particularly heavy, and resulted in the highest recorded cumulative precipitation for the Northern Sierra 8-Station Index for the months of January and February.

June 2017

The numerous storms of 2017 resulted in one of the largest recorded Sierra Nevada snowpack. Pine Flat and other reservoirs continued to fill during the hot weather of the late spring and early summer months as that snowpack melted. Large reservoir releases in the month of June stressed downstream waterways and created hazards to recreational users as the cold, swift, highwater moved through the systems.



1 Napa Area Jan 9

- Napa River floods
- Napa downtown bypass used for first time, since it was completed in 2015
- Town of San Anselmo evacuated

2 Hollister Jan 11 & 20

- Pacheco Creek levee break
- Mandatory evacuations

3 Bay Delta Jan 11–12

- High river flows, high tide, and stormy conditions stress levees
- Levee overtopping and breaching occurred on the lower Mokelumne River and tributary sloughs
- Community of Point Pleasant flooded, including several primary roadways, requiring the rescue of 14 people from their homes and cars
- Van Sickle Island levee failure inundated the island and one home

4 Guerneville Jan 24 & Feb 8

- Community of Guerneville flooded
- Inundated structures and roads for the second time in 2017

5 Redding Feb 6

- Highwater in creeks and tributaries to Sacramento River damaged and closed roads

6 Oroville Spillway Incident Feb 7–24

- Main spillway and emergency spillway damaged by heavy flood releases
- 180,000 people evacuated

7 Bay Delta Feb 12–13

- McCormack Williamson Tract flooded due to overtopped and breached levees
- Tyler Island was evacuated due to a potential levee breach. Extensive emergency repairs through multi-agency cooperation averted the levee failure

8 Big Sur Feb 15 & May 19

- Pfeiffer Canyon Bridge damaged due to mudslides, caused major road closure through October 2017
- Landslide near Mud Creek
- Rock and debris fell across the road into the ocean destroying nearly a quarter mile of Highway 1

9 Fresno Slough Feb 16

- Weakened levees near Tranquility (evacuation advisory)

10 Southern California Feb 16–19

- Flooding in greater LA area
- Five casualties
- 110,000 residents without power

11 City of Maxwell Feb 18

- Overflowing creeks inundated homes, businesses, and schools with a foot or more of water

12 Manteca Feb 20

- Levee breach along San Joaquin River
- 500 evacuated

13 San Jose Area Feb 21

- Coyote Creek floodwaters overflowed the channel banks
- 14,000 people evacuated in Rock Springs neighborhood
- 200 people rescued by boat
- \$73 million in damages

14 Clear Lake Feb 23

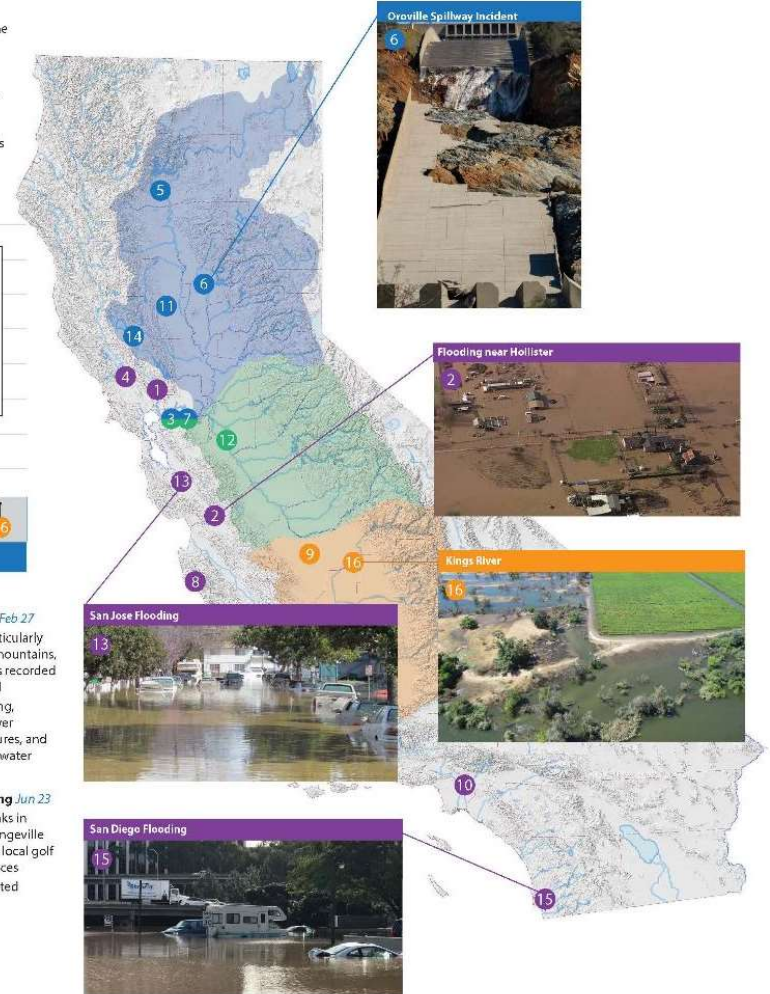
- Homes and roads flooded
- 50 people evacuated

San Diego County Feb 27

- Heavy rainfall, particularly along the coastal mountains, with up to 5-inches recorded in a 24-hour period
- Widespread flooding, downed trees, power outages, road closures, and more than 20 swiftwater rescues

Kings River Flooding Jun 23

- Multiple levee breaks in Kingsburg and Grangeville caused flooding to local golf course and residences
- 300 people evacuated



Major Flood Events and Responses

January in the Delta





Major Flood Events and Responses

February in the Delta

02/11/2017



Major Flood Events and Responses

Greater Los Angeles Area

Major Flood Events and Responses

San Diego County





Major Flood Events and Responses

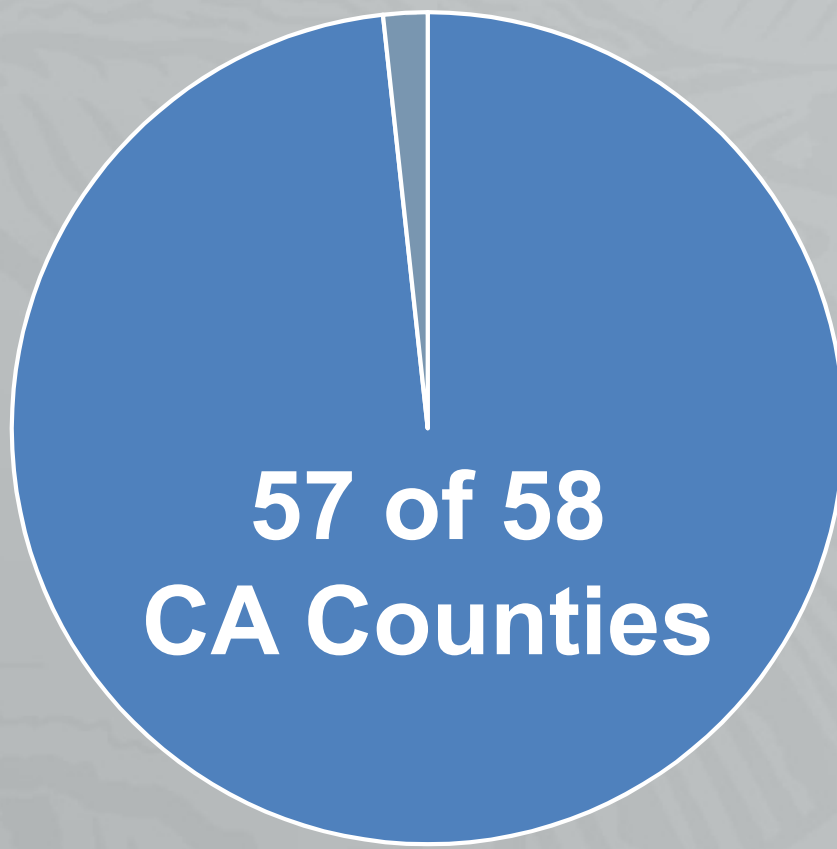
Kings River

06/25/2017

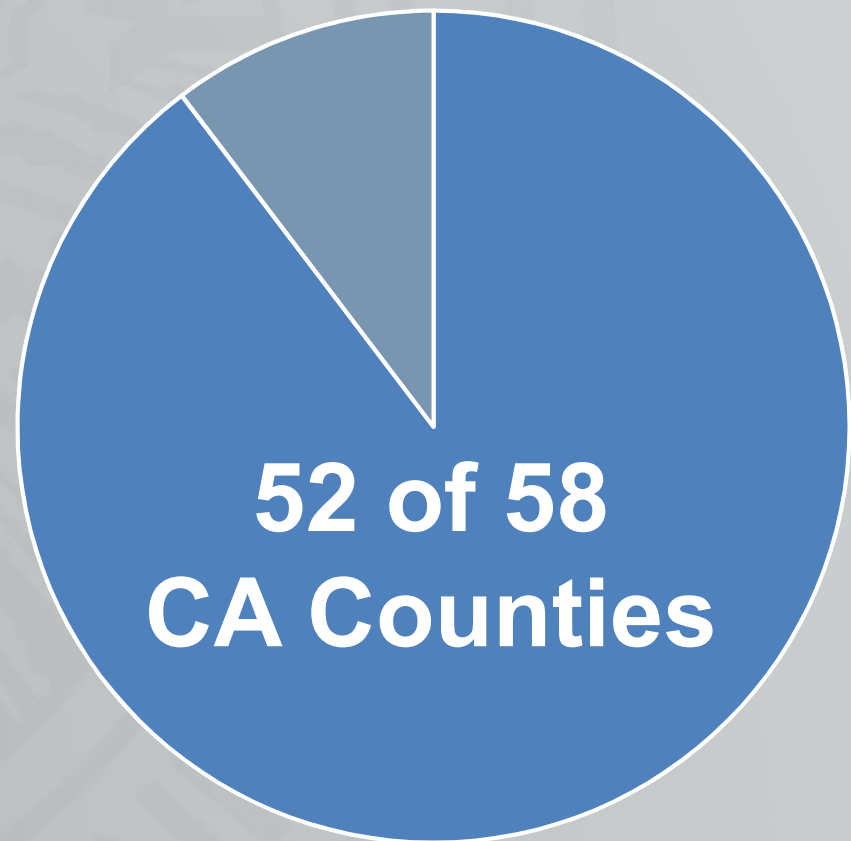


State & Federal Declarations

Governor-Declared
State of Emergency



Federal Emergency
Declarations





Major Flood Events and Responses

2017 Storm Damages Emergency Rehabilitation



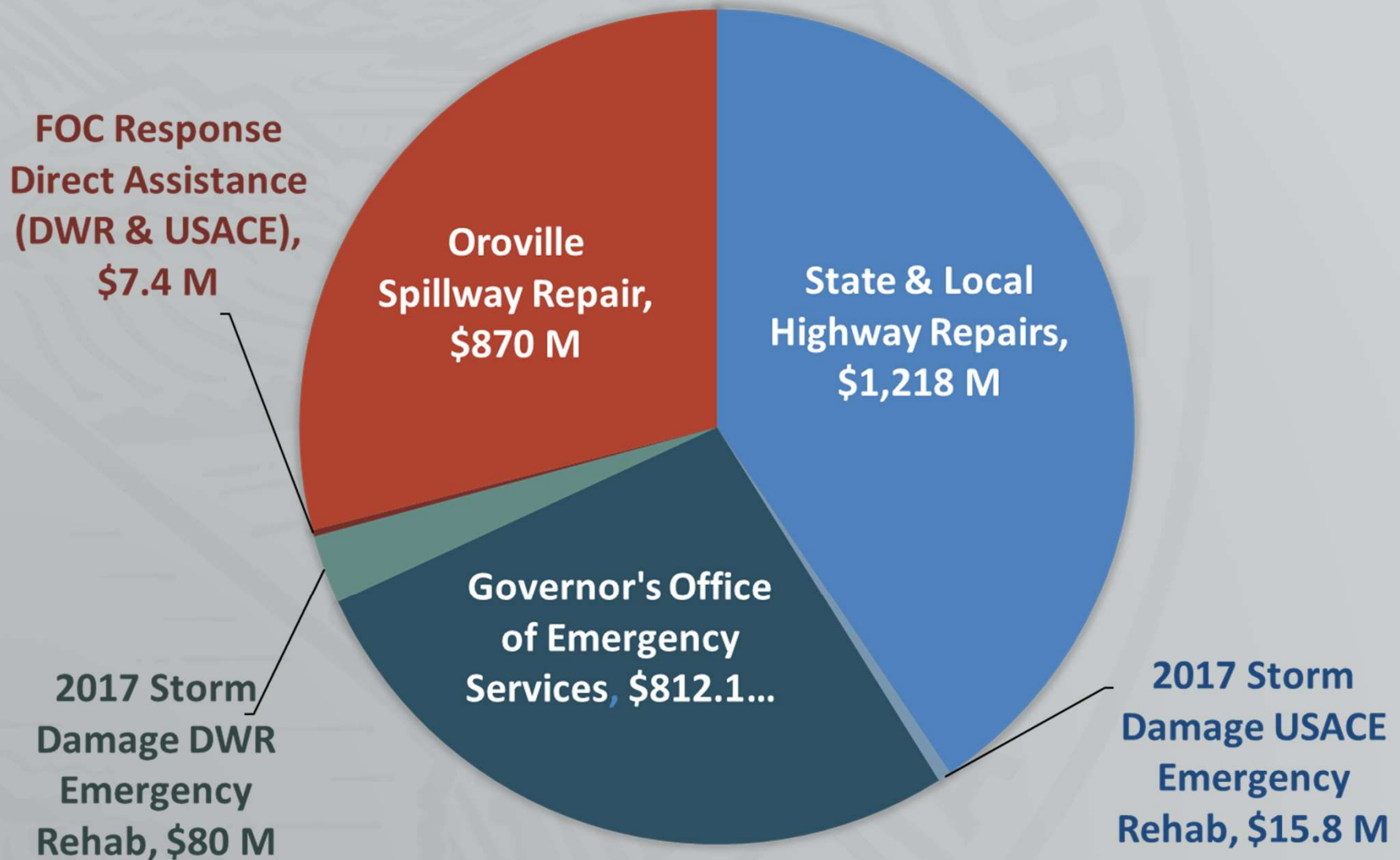
Estimated Damages

Due to 2017 Floods

\$3 Billion

Includes: OES, Caltrans, DWR/USACE Direct Assistance, Oroville Spillway Repairs, and DWR/USACE Levee Rehabilitation

Estimated Damages (\$ Millions)



Status of the Report



California High Water Bulletin 69-2017

State of California
The Natural Resources Agency
Department of Water Resources

Questions

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CALIFORNIA DEPARTMENT OF WATER RESOURCES
DIVISION OF FLOOD MANAGEMENT

Flood Operations

2017 After-Action Report

CVFPB Board Meeting | July 27, 2018

Delia McGrath

Hydrology and Flood Operations Office

After-Action Report Overview

- Overview of FOC Response
- Application of Standardized Emergency Management System (SEMS)
- FOC Best Practices
- Recommendations for Improvements



Overview of FOC Response 2017 Activation



151 Days



105 Incidents



Cal OES
GOVERNOR'S OFFICE
OF EMERGENCY SERVICES



®



151 Days

02



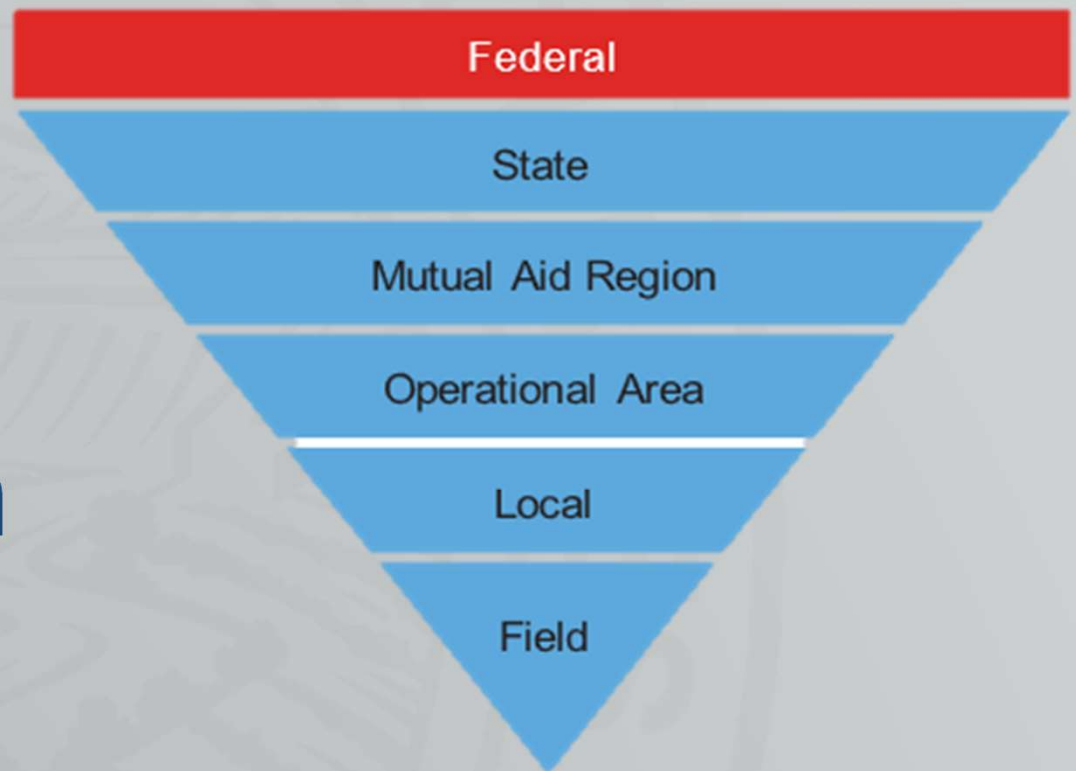
Overview of FOC Response

Improved Local Response

- Grant funding
- Flood fighting
methods training
- Flood system repair
funding



Application of SEMS



Management

Operations

Intelligence

Planning

Logistics

Finance/
Admin



Application of SEMS Management Section

Inter-Agency Coordination & Roster Management



Application of SEMS

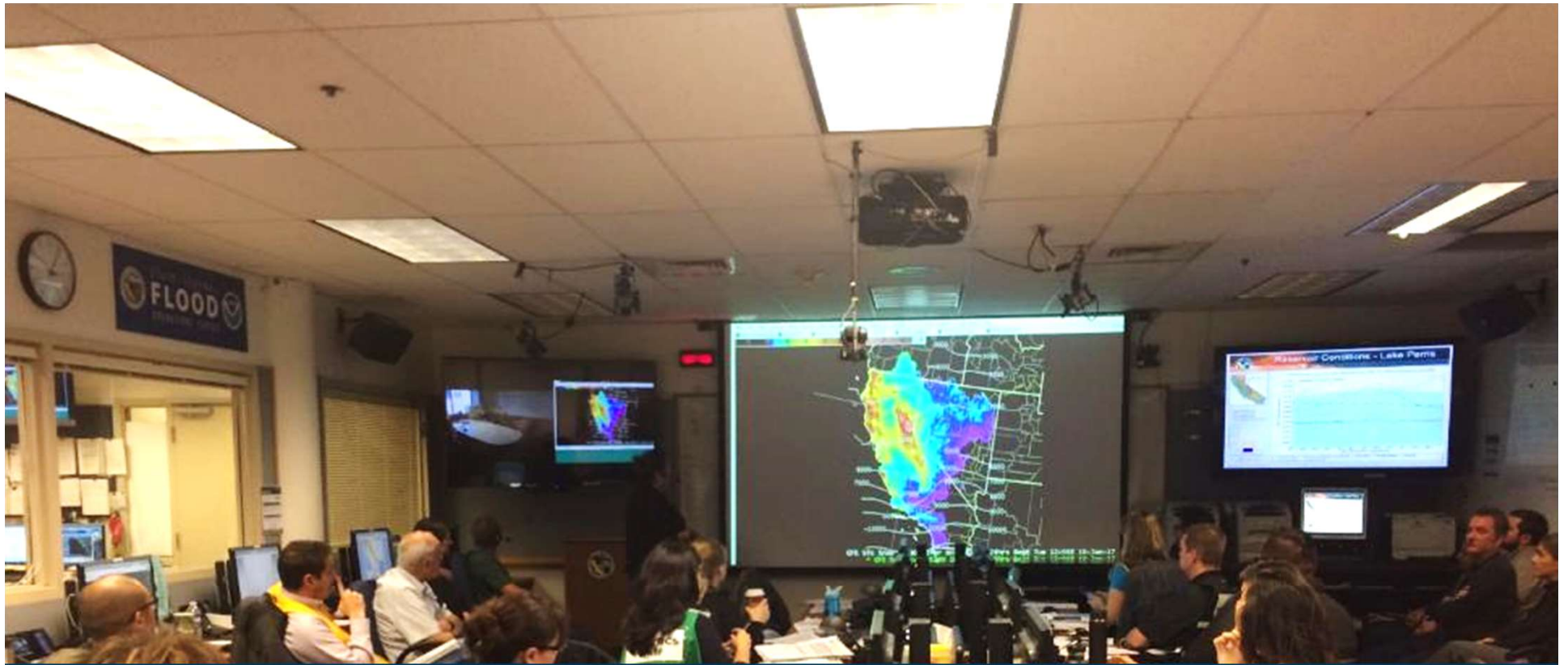
Operations Section

Deployments, Flood-Fighting, Assessing Threats



Application of SEMS Planning Section

Reporting, Coordination, and Information Dissemination



Application of SEMS Intelligence Section

Weather Briefings, River & Hydrology Forecasts, Coordinated Flood Releases





Application of SEMS

Logistics Section

Flood Fight Material Management & Resource Mobilization



Application of SEMS

Finance/Administration Section

Funding Identification, Time Recording, Purchasing, & FEMA Reimbursement Coordination



FOC Best Practices

- Provide Position Training
- Maintain ICT Readiness Matrix
- Conduct Drills & Exercises
- Regular Communication
- Streamlined requests
- 1-Week Field Deployments
- Prepositioned flood fight materials
- Timekeepers time entry



Recommendations for Improvement

IMPROVE



CREATE



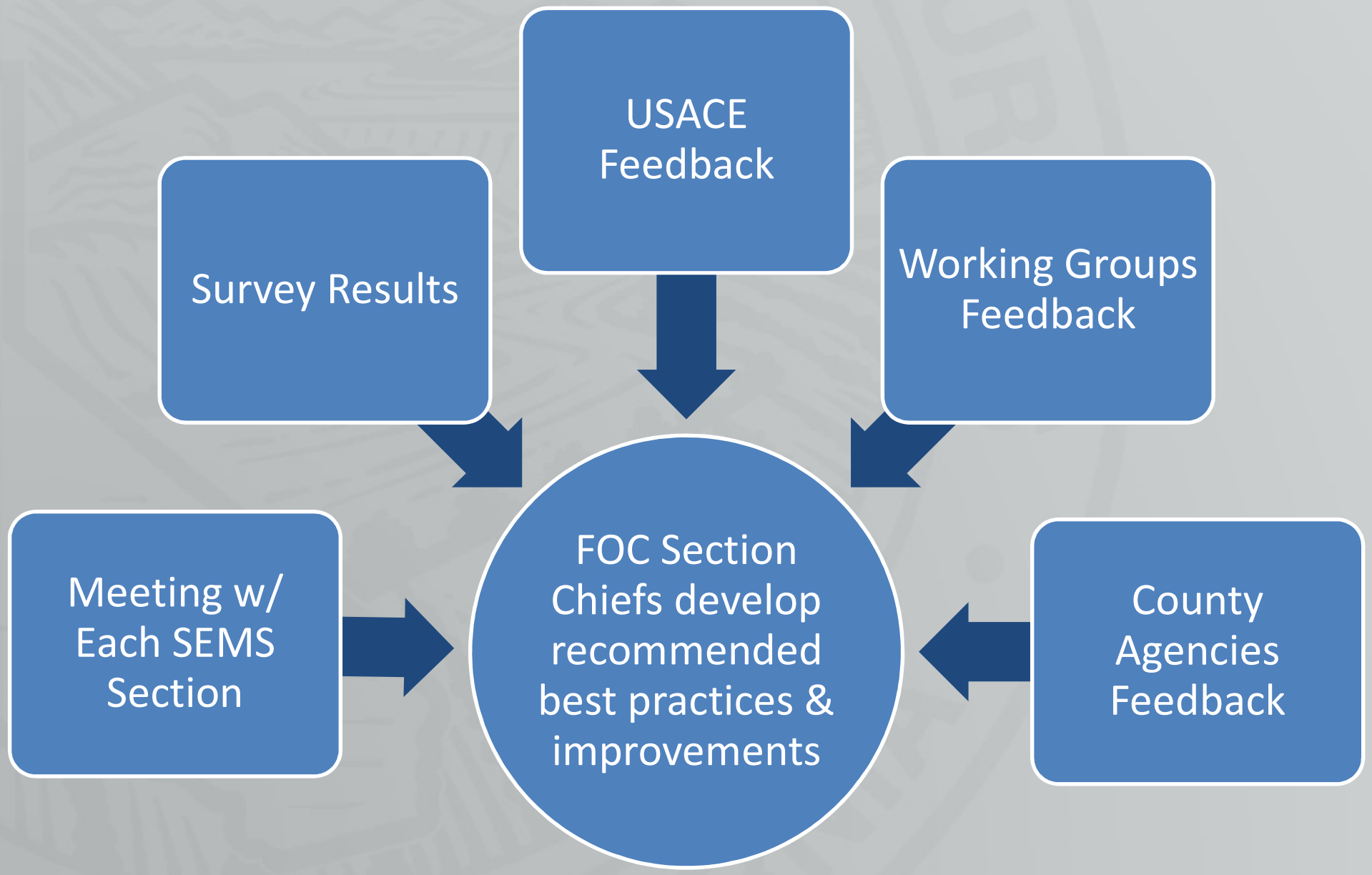
STANDARDIZE



TRAIN



After-Action Review Process



Questions

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STATE FEDERAL FLOOD OPERATIONS CENTER

(916) 574-2619 24-Hour Contact